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10/509,644	09/29/2004	Steven Lobregt	PHNL020249US	4292

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PHILIPS INTELLECTUAL PROPERTY & STANDARDS
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EXAMINER	
BROOME, SAID A	

ART UNIT	PAPER NUMBER
2628	

DATE MAILED: 04/04/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/509,644	LOBREGT, STEVEN	
	Examiner	Art Unit	
	Said Broome	2628	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *09 March 2002*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-15* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-15* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date 9/29/04
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claim 6 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Claim 6 recites a distance between the first and second viewpoint that is essentially one or more millimeters, which would be interpreted as a range from one to an infinite number of millimeters. Therefore, the claimed subject matter is indefinite because the claim does not distinctly indicate a maximum limit to the millimeter range.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1, 7 and 13-15 are rejected under 35 U.S.C. 102(b) as being anticipated by Shimizu (US Patent 5,953,013).

Regarding claim 1, Shimizu teaches a method of visualizing an internal hollow organ of a subject based on a volumetric scan in column 11 lines 30-31, where it is described that volume rendering is used to visualize the three dimensional image, as also described in column 12 lines 20-22 ("...a three-dimensional image is constructed as if the inside of the subject was observed

under an endoscope."). Shimizu also teaches reconstructing a number of three-dimensional images of the internal surface of the hollow organ in column 12 lines 23-26 ("...volume rendering method, a three-dimensional image is obtained as if the inside of the subject was observed while an endoscope was moved...") and column 5 lines 66-67-column 6 lines 1-7 ("...an X-ray CT apparatus but it can measure a plurality of sliced images three-dimensionally. Accordingly, an image constructed by two-dimensional images arranged three-dimensionally can be obtained by the MRI apparatus. This image is called "volume image". This volume image (three-dimensionally arranged image) can be decomposed into two-dimensionally arranged images (slice arrangement)."). Shimizu also teaches calculating an image for the left eye from a first view point and an image for the right eye from a second view point that differs from the first view point in column 13 lines 7-15 ("...the first image obtained from the left eye's view point and the second image obtained from the right eye's view point are seen by the left and right eyes individually..."). Shimizu also teaches combining the left eye image and the right eye image into a pair to form a stereoscopic image in column 13 lines 42-46, where it is described that the constructed stereoscopic image is generated from the simultaneous viewing of the left and right images, as shown in Figure 11. Shimizu also teaches showing the stereoscopic image using stereoscopic imager means in column 13 lines 42-46 and is illustrated in Figure 12 as element 25.

Regarding claim 7, Shimizu illustrates the view direction in the first and the second view point is essentially parallel in Figure 11.

Regarding claim 13, Shimizu teaches a system for visualizing an internal hollow organ of a subject based on a volumetric scan in column 11 lines 25-27, where it is described that a

system, as illustrated in Figure 12, is used to visualize an internal hollow organ as described in column 12 lines 20-22 ("...a three-dimensional image is constructed as if the inside of the subject was observed under an endoscope."). Shimizu also teaches reconstructing a number of three-dimensional images of the internal surface of the hollow organ in column 12 lines 23-26 ("...volume rendering method), a three-dimensional image is obtained as if the inside of the subject was observed while an endoscope was moved..."). Shimizu also teaches calculating an image for the left eye from a first view point and an image for the right eye from a second view point that differs from the first view point in column 13 lines 7-15 ("...the first image obtained from the left eye's view point and the second image obtained from the right eye's view point are seen by the left and right eyes individually..."). Shimizu also teaches combining the left eye image and the right eye image into a pair to form a stereoscopic image in column 13 lines 42-46, where it is described that the constructed stereoscopic image is generated from the simultaneous viewing of the left and right images, as shown in Figure 11. Shimizu also teaches showing the stereoscopic image using stereoscopic imager means in column 13 lines 42-46 and is illustrated in Figure 12 as element 25.

Regarding claim 14, Shimizu teaches a computer readable media, as illustrated in Figure 12 as element 9, that comprises a program to carry out the method of claim 1 as described in column 12 lines 46-50 ("...constructs a three-dimensional image by using the main memory 9 as if the inside of the subject was observed under an endoscope, and feeds the resulting three-dimensional image to the display...") and column 17 lines 45-47 ("FIG. 17C shows a program procedure for obtaining a unit three-dimensional image and a three-dimensional image. FIG. 17B

shows a shared memory 28 for relaying processing of the programs shown in FIGS. 17A and 17C. The shared memory 28 is included in the main memory 9.").

Regarding claim 15, Shimizu teaches the viewing means incorporated in a head-mountable display in column 13 lines 37-38 and is also illustrated in Figure 12 as element 25.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 2-5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shimizu (US Patent 5,953,013) in view of Lorenson et al. (US Patent 5,611,025).

Regarding claim 2, Shimizu teaches defining a view path through the hollow organ in column 17 lines 17-21 ("...a three-dimensional original image having a pipe path (such as an intestine or a trachea) formed in the direction of the depth thereof is to be inspected as if the deep side of the pipe path thereof was observed under an endoscope... "). Shimizu also teaches reconstructing the images as seen from view points lying on the view path in column 17 lines 23-27 ("In order to track the image in the direction of the depth thereof, the view point, the view line direction and the projection plane are updated..."), where it is described that as the view points change along the view path, as illustrated in Figure 16, updates are performed in response to those changes and the three dimensional images are updated or reconstructed as a result of those

updates, as described in column 20 lines 31-33 ("Whenever updating is performed, a three-dimensional image is obtained and displayed on the display screen."). Shimizu fails to teach at least the first or the second viewpoint lies on the view path. Lorensen et al. teaches at least the first or the second viewpoint lies on the view path in column 4 lines 65-67 where it is described that the user may select or initialize a starting viewpoint for the view path, and that rendered view path may be displayed in a stereoscopic manner, as described in column 5 lines 20-21 and 30-34 ("Stereoscopic viewing may be used to enhance the perception of three dimensional relationships. "), therefore a user has the option to choose to view the path with at least one of the first viewpoint for the left eye or the second viewpoint for the right eye. It would have been obvious to one of ordinary skill in the art to combine the teachings of Shimizu and Lorensen et al. because this combination would provide a modifiable view of a path through an internal organ of interest, which enables an advanced user interface.

Regarding claim 3, Shimizu teaches defining a view path through the hollow organ in column 17 lines 17-21 ("...a three-dimensional original image having a pipe path (such as an intestine or a trachea) formed in the direction of the depth thereof is to be inspected as if the deep side of the pipe path thereof was observed under an endoscope... "). Shimizu also teaches reconstructing the images as seen from view points lying on the view path in column 17 lines 23-27 ("In order to track the image in the direction of the depth thereof, the view point, the view line direction and the projection plane are updated..."), where it is described that as the view points change along the view path, as illustrated in Figure 16, updates are performed in response to those changes and the three dimensional images are updated or reconstructed as a result of those updates, as described in column 20 lines 31-33 ("Whenever updating is performed, a three-

dimensional image is obtained and displayed on the display screen."). Shimizu fails to teach both the first or the second viewpoint lies on the view path. Lorensen et al. teaches viewing the images along the view path in stereoscopic view, therefore the user would be capable of viewing the stereoscopic display using both the image for the left and right eyes respectively, as described in column 5 lines 32-34 ("Stereoscopic viewing may be used... requires two separate images to be provided to operator 5: one corresponding to the left eye view and one corresponding to the right eye view."). The motivation to combine the teachings of Shimizu and Lorensen et al. is equivalent to the motivation of claim 2.

Regarding claim 4, Shimizu fails to teach view points on the view path are alternatively used as first or second view point. Lorensen et al. teaches selecting any viewpoint in column 4 lines 14-15 ("...an operator controls the image viewpoint with a graphical interface..."), therefore the user would be capable of alternatively selecting any viewpoint, including a first or second viewpoint of the left or right eyes respectively that are described to be provided by the renderer in column 5 lines 30-34 ("Stereoscopic viewing may be used...requires two separate images to be provided to operator 5: one corresponding to the left eye view and one corresponding to the right eye view."). The motivation to combine the teachings of Shimizu and Lorensen et al. is equivalent to the motivation of claim 2.

Regarding claim 5, Shimizu teaches defining a view path through the hollow organ in column 17 lines 17-21 ("...a three-dimensional original image having a pipe path (such as an intestine or a trachea) formed in the direction of the depth thereof is to be inspected as if the deep side of the pipe path thereof was observed under an endoscope... "). Shimizu illustrates a first and second parallel viewpoint in Figure 11 that may be used to visualize the inner hollow organ,

as described in column 12 lines 48-50 ("...constructs a three-dimensional image by using the main memory 9 as if the inside of the subject was observed under an endoscope...") and column 13 lines 7-15 ("...the three- dimensional images after construction can be observed stereoscopically..."), in which the inner hollow organ is viewed along a path as illustrated in Figure 16. Therefore when the stereoscopic display is chosen to view the inner hollow organ path of Figure 16("view line direction"), the first and second parallel viewpoints illustrated in Figure 11 would be at a mutual distance from the view path designated as "view point" which moves in a "view line direction" in Figure 16, and is also described in column 13 lines 18-22 ("...the two view points are moved so as to be interlocked with each other so that the projection plane is updated on the assumption that one view point is located in the middle between the two view points."), where it is described that the view point, which is the view path moving in a certain "view line direction", is directly between the two left and right viewpoints and therefore lies on respective dashed view lines as well when the stereoscopic view is chosen to view the inner hollow organ of Figure 16. The motivation to combine the teachings of Shimizu and Lorensen et al. is equivalent to the motivation of claim 2.

Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Shimizu (US Patent 5,953,013) in view of Orgino (US Patent 6,762,794).

Regarding claim 6, Shimizu fails to teach the distance between the first and second viewpoint is essentially one or more millimeters. Orgino teaches a distance between the first and second viewpoints, which is known in the art to be the inter pupillary distance, is one or more millimeters in column 8 lines 19-29 ("A range within which humans can fuse left and right

parallax images presented on display screens as a stereoscopic image...The image-fusible range depends on the characteristics of the human eyes. Considering that the inter-pupillary distance of the human is about 65 mm wide..."); and is illustrated in Figure 2 as element $2d_h$. It would have been obvious to one of ordinary skill in the art to combine the teachings of Shimizu and Orgino because this combination would provide the accurate distance between the viewpoint of each eye, to be measured in millimeters, which is a common unit of measure for inter pupillary distance, as known in the art.

Claims 8 and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shimizu (US Patent 5,953,013) in view of Palm (US Patent 5,748,199).

Regarding claim 8, Shimizu fails to teach the limitations. Palm teaches showing the left and right eye image forming a stereoscopic image with different modification in column 12 lines 61-67 ("true 3-dimensional stereo presentations to a user are becoming less expensive and are being readily adopted...With respect to imaging, some of these utilize field sequential technology with polarizing glasses."), where it is described that the stereoscopic image is shown with a different modification such as a polarized image. Palm also teaches arranging the stereoscopic imager means such that the left eye image is passed to the left eye and the right eye image is passed to the right eye in column 12 line 67-column 13 line 1 ("One field of an image is transmitted for the left eye followed by one transmitted for the right eye."). It would have been obvious to one of ordinary skill in the art to combine the teachings of Shimizu and Palm because this combination would provide an alternate stereoscopic viewing option for the user, which enhances the three-dimensional viewing experience.

Regarding claim 9, Shimizu fails to teach the limitations. Palm teaches alternately showing the left and right eye image of a stereoscopic image with different polarization in column 13 lines 1-6 ("Polarization of each field is oriented to be orthogonal with the other field so that polarized glasses will allow one frame through the left eye piece and one through the right eye piece by switching the polarization to either block or admit light from a field being produced."), which provides view means for respectively the left and right eye. The motivation to combine the teachings of Shimizu and Palm is equivalent to the motivation of claim 8.

Claims 10 and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shimizu (US Patent 5,953,013) in view of Palm (US Patent 5,748,199) in further view of Chiu (US Patent 5,606,348).

Regarding claim 10, Shimizu fails to teach the limitations. Chiu teaches showing the left and right eye image of a stereoscopic image with different time multiplexation in column 2 lines 10-15 ("In a time multiplex method, the image data are presented to the display at different time intervals (i.e. displaying the right eye data at time t.sub.0, followed by the left eye data at time t_1, followed by right eye data at time t_2."). Chiu also teaches providing the stereoscopic imager means with different viewing means for the left and right eye that are to be activated separately by a control unit based on corresponding time-multiplexation signals in column lines ("The spatial multiplex method involves presenting the perspective image data at different areas on the screen (i.e. right eye image data on odd columns and left eye image data on even columns on the display; or alternate rows can be used)...This can be accomplished in a time-multiplex or spatial-multiplex fashion. Because of the wide variety of methods used in 3D display systems, each 3D

system requires a unique driver controller to present the stereo image data to the display..."). It would have been obvious to one of ordinary skill in the art to combine the teachings of Shimizu, Palm and Chiu because this combination would provide an alternate stereoscopic viewing option for the user, which enhances the three-dimensional viewing experience.

Regarding claim 11, Shimizu teaches the viewing means incorporated in a head-mountable display in column 13 lines 37-38 and is also illustrated in Figure 12 as element 25.

Claim 12 is rejected under 35 U.S.C. 103(a) as being unpatentable over Shimizu (US Patent 5,953,013) in view of Chiu (US Patent 5,606,348).

Regarding claim 12, Shimizu fails to teach the limitations. Chiu teaches the stereoscopic imager means comprising a lenticular screen in column 2 lines 17-23 ("...presenting the perspective image data at different areas on the screen ...In this method, lenticular lens or micro-polarizer filters are the most common devices to use to direct the images to the eyes."), where it is described that the display screen used to present the images to the eyes utilizes a lenticular lens, therefore the display screen is a lenticular screen because it comprises lenticular lenses. It would have been obvious to one of ordinary skill in the art to combine the teachings of Shimizu and Chiu because this combination would provide precise stereoscopic three dimensional viewing.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Said Broome whose telephone number is (571)272-2931. The examiner can normally be reached on 8:30am-5pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ulka Chauhan can be reached on (571)272-7782. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

S. Broome SB
3/27/06

ULKA CHAUHAN
SUPERVISORY PATENT EXAMINER